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ABSTRACT

Arguing that the vagueness with which the relationship between social interaction and language is often treated in the literature makes it difficult to explicate and evaluate different views of that relationship, this paper poses four questions designed to differentiate positions and to provide a system for organizing data potentially relevant to evaluating them. The questions posed by the paper are as follows: Are the acquisition of social knowledge and linguistic knowledge simultaneous? Are there facilitating effects of one system on the other and are they unidirectional or bidirectional? How much is the relationship mediated by the internal properties of the child? and Is the relationship based on structural commonalities? As a way of examining the data bearing on the answers to these questions, the paper outlines and evaluates four different kinds of relationships between social interaction and syntax that are distinguishable on the basis of the different sorts of answers they provide to the questions. The paper concludes that the set of reasonable relationships adheres to the following constraints: (1) while some social knowledge is acquired earlier than linguistic knowledge, it is unlikely that much of the acquisition of one system occurs prior to the other; (2) it is unlikely that facilitation is bidirectional, if it occurs at all; and (3) there is at best only a partial structural commonality between the two domains, suggesting that internal properties of the child are central to a characterization of the relationship. (FL)

CENTER FOR THE STUDY OF READING

Technical Report No. 214

LEARNING THE RULES OF THE GAME:
FOUR VIEWS OF THE RELATION BETWEEN
SOCIAL INTERACTION AND SYNTAX ACQUISITION

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Learning the Rules of the Game: Four Views of the

Relation Between Social Interaction and Syntax Acquisition

That language is a phenomenon belonging primarily to the domain

of social activities is hardly an arguable point. While one can list

nonsocial uses of language as well as types of social interaction that

are not linguistic, the fact remains that the overlap between language

use and social interaction, though imperfect, is still considerable.

Moreover, some minimal amount of social interaction seems to be

necessary for language acquisition to take place. The obvious kin-

ship between language and social interaction suggests the possibility

of a relationship between knowledge in the social sphere and the learning

of linguistic forms. Yet, the precise nature of that relationship is

not so obvious. While researchers have often argued that investiga-

tions of the social contexts of acquisition are central to demysti-

fying the process of acquisition (e.g., Campbell & Wales, 1970; Ryan,

1974), few have specified just what the role of interaction in

acquisition might be. Despite this lack of clarity, the popuiarity

of the primacy-of-interaction view, as well as the number of studies

it has already spawned, is astonishing. For this reason alone, it

is worth examining more carefully some possible relatiorships between

social interaction and syntax acquisition, with particular attention

to their historical origins and the arguments that can be mounted

for or against them.

Given the vagueness with which the interaction-language relation-
ship is often treated in the literature, how can one begin to explicate
and evaluate different possible views of that relation? I suggest
that one can ask four questions which help to differentiate positions
and to provide a system for organizing data potentially relevant to
evaluating them. First, one can ask whether the acquisition of social
knowledge and linguistic knowledge are seen as simultaneous tasks or
whether one is considered to be prior to the other. Second, are
there facilitating effects of one system on the other and are they
unidirectional or bidirectional? A third question concerns the
directness of the relationship. That is, how much is the relation
mediated by the internal properties of the child? Finally, one can
ask whether the relationship is based on structural commonalities
between the two systems, and if so, what the nature and extent of
those commonalities are. While the existing data do not allow us
to determine with much certainty or specificity the actual relation-
ship between social interaction and syntax acquisition, I contend
that we can at least limit the set of relationships which it is
reasonable to investigate further to those consistent with tentative
answers to these four questions.

As a way of examining the data bearing on the answers to these
questions, I outline and evaluate four different kinds of relation-
ships between social interaction and syntax acquisition which are

distinguishable on the basis of the different sorts of answers .they

provide to the above questions. The positions range from a strong

one, deriving syntax acquisition directly from interactionally pro-

vided social knowledge (View 1), to a weak one, where the relatively

autonomous process of syntax acquisition can be facilitated by the

efficient distribution of processing resources (View 4). From the dis-,

cussion of the four positions, I shall conclude that the set of

reasonable relationships adheres to the following constraints: First,

while some social knowledge is acquired earlier than linguistic

knowledge, it is unlike' that much of the acquisition of one system

occurs prior to the other. Given this, it is likely that facilita-

tion sill be bidirectional, if it occurs at all. With regard to

the specific sort of relations to be found between the two domains,

there is at best only a partial structural commonality, and even

this is relatively indirect, suggesting that internal properties of

the child are central to a characterization of the relation.

One implication of these conclusions is that interactionist,

anti-nativist theories of acquisition are incompatible with reasonable

relationships between social interaction and syntax acquisition,

since they discount the importance of the internal properties of the

child. To anti-nativists, who are so often strong advocates of the

investigation of the social interaction context of language acquisition,

this implication is likely to be both surprising and disconcerting.

Perhaps they can take solace in yet another conclusion: that there
still appear to be places for social interaction in the acquisition
story, albeit not the expected one. To defend these claims, I turn
now to the outlines of the four positions.

An Anti-Nativist View: Direct Structural Relations

There can be little doubt that the recent interest in the relation-
ship between social interaction and the acquisition of language is
in direct response to the innateness solution proposed by transforma-
tional grammarians to the puzzling fact that language development
occurs during a time when other complex cognitive systems do not
demonstrate such quick and general growth. As Bruner (1977) noted,

> "The dominant view of the last decade has been, of course,
> Chomsky's, based on his so-called Language Acquisition
> Device. But the central feature of that device--that the
> child in some sense 'has a knowledge' from the start of
> the universal rules of language and that he generates
> from this knowledge hypotheses about the local language
> encountered around him--while boldly suggestive, is plainly
> insufficient in the light of the past years of research.
> A more realistic approach to language acquisition must
> surely examine what the child learns that helps him pass
> from prespeech communication to the use of language proper,
> lest we leap too easily to Cartesian conclusions about
> innateness."

A proposed alternative to the innateness solution, then, is to give
the child a prior-learned system of knowledge with which the child

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can uncover the structure of language. Since language acquisition goes
on in a social context, a good bet for the known system is inter-
actional knowledge.

Note that if the motivation for a system of antecedents is to
reduce the contribution of the child, then only certain kinds of
prior systems will suffice; namely, those which directly and clearly
provide the structural information necessary for the acquisition of
the new system, since any indirect relation assumes mediation via
the internal properties of the child. (We discuss below other sorts
of prior systems not so motivated and without the anti-nativist
constraint that the child be a weak contributor.) More specifically,
the notion of facilitation on structural grounds seems to depend on
a view of the child as analogy-maker, seein similarities between one
system and another (cf. Shatz, in press). As Gearner (1981) has
pointed out, analogy differs from identity in that making analogies
always involves selecting some relations and not others as relevant.
The ability to be appropriately selective is, of course, a property
of mind and would appear to go against the goal of weakening the
child's contribution. Yet, to the extent that the analogy between
the known and unknown system is a good one, then presumably it
requires less on the part of the learner to recognize and understand
it. Thus, the issue is whether there exists a "good" analogy between
the two systems. Good structural analogies have been described as

clear, systematic, and specific (Gentner, 1981). To date, the evidence

that the relationship between social and syntactic information has

these characteristics has not been forthcoming. Few specific relations

have even been proposed and those that have (e.g., Bruner, 1975) have

not been successfully defended. For example, while interactions in-

volving actions such as giving and taking may have an inherent order

to them, the translation of that order to word order in a given

language is not necessarily direct or transparent (cf. Slobin, 1982).

Likewise, gestures, another source of information in interactive

situations that has been proposed as potentially useful to the child

(Macnamara, 1977), do not map to grammatical properties of language

in sufficiently unique or systematic ways to be taken as good clues

to structure (Shatz, in press).

Even if "good" analogic relations could be found, there is a

further requirement that would have to be met before acquisition

could be claimed to be free of much mediation by the internal

properties of the child. Since language acquisition is not in-

stantaneous, the order and rate of development should also be a

function of the social environment. There are two alternative ways

this requirement could be fulfilled. First, the child might be

provided during the prelinguistic stage with all the social infor-

mation he or she would need to acquire language, but only gradually

be provided with the necessary interaction-language pairs from which

to draw the appropriate structural analogies. The other alternative is

that as soon as the child obtained a particular social understanding,

the relevant language would immediately be provided and the structural

information extracted. In either case, the order of acquisition

would depend on the orderly provision of data from sources outside

the child.

Consider instead a state of affairs such that, regardless of what

mappings were provided for him, the child acquired grammar in a dif-

ferent way from the way the data were presented. Then one would have

to concede that there were internal constraints on the application of

the prior system to the one being acquired. Such constraints might

be either general processing characteristics that limit the young

child's ability to use the data as given or constraints peculiar to

a language acquisition device. Presumably, the former limitation

would be more palatable to anti-nativists than the latter. However,

in the absence of a well-documented theory of processing, it is

impossible to determine which of the internal constraints that might

ue found stem from general processing causes. Hence, any evidence

for internal constraints is a potential threat to an anti-nativist

position.

Again, the relevant data are not encouraging to the anti-

nativist view. Elsewhere I have addressed at length the problems of

trying to locate the major burden of acquisition order in the environ-

ment (Shatz, in press). Suffice it to summarize those arguments here

by saying that the facts of early mother-child interaction do not support the view that mothers are so finely tuned to their children's development that they provide them with an ordered set of regularly changing data that can account for the order of their acquisitions (also see Hoff-Ginsberg & Shatz, Note 1, for a review). Rather, it appears that children take from the data the information they are "ready" to utilize. Readiness appears not to be a function solely of what the child has already been exposed to but of what the child has already constructed of the grammar. Whether the child's selectivity is a result of processing limitations or the language acquisition "program," to the extent that there appear to be internal influences on acquisition order, then there is less reason to hold to a strong anti-nativist position.

Still another characteristic of the anti-nativist view can be called into question. As noted above, social knowledge is assumed to be the base system generally necessary to the acquisition of syntactic knowledge, although specific alternative formulations may vary with regard to how much social knowledge precedes any syntax acquisition. That is, all relevant social knowledge could be acquired prior to any syntactic acquisitions during the prelinguistic period, or "local" advances in social knowledge could be followed by relevant local acquisitions in syntax. In either case social knowledge necessarily precedes advances in syntax, and the acquisition of it is conceptualized as a prior and not a concurrent task.

However, children's interactive behavior can often be shown to be the result of fairly primitive response strategies, and the development of their intentional understandings may depend at least in part on linguistic cues (Shatz, 1978c). Moreover, the strategies children sometimes develop in interactive situations often seem to be far removed from either interactive or formal linguistic convention. For example, we observed the following dialogues between a 25-month-old child and her mother, who regularly used "hmm" in two ways, either to acknowledge her child's utterance or to prompt the child after an unanswered question of her own.

1. M: Can you put the bed in one of the rooms?

   Hmm?

   C: Hmm.

2. M: Who's gonna drive the car?

   C: Hmm.

   M: Who's gonna drive the car?

   C: Hmm.

   M: Is Mommy gonna drive the car?

   C: Hmm.

3. M: What's this?

   C: Doggie.

   M: How does a doggie go?

   C: Woof.

M: Woof?

Hmm. Okay.

Where should the doggie go in the house?

C: Hmm.

The sequence suggest the child developed an answering strategy on the basis of her experience with her mother, but her response behavior indicates that she misinterpreted and misused the interactional data provided. Such examples have to make one skeptical about how much a child knows about the meaning of the interaction she is being engaged in before she begins to unravel the complexities of syntax.

In sum, then, the interactionist, anti-nativist view answers the four questions we posed earlier in the following way: There are direct structural commonalities between the two areas of knowledge, the contribution of the child is low, and the social task precedes the one of syntax acquisition, with the direction of influence flowing from the prior to the later task. On multiple grounds, such a view does not seem tenable. It remains to examine other sorts of language-interaction relationships and the cases that can be made for them.

Neo-Nativist Views: Partial or Indirect Structural Relations

In and of itself a system of necessary antecedents is not incompatible with an innatist view of language acquisition. Indeed, recent theories of syntax acquisition which postulate rich innate

linguistic mechanisms also stipulate the need for meaning representa-

tions of input sentences in order for syntactic analysis to proceed

(Pinker, in press; Wexler & Culicover, 1980). To the extent that

such representations are derived from events occurring in a social

context, social information becomes prerequisite to the syntax

acquisition enterprise. While one sort of knowledge still takes

temporal precedence over another, these systems differ from the anti-

nativist view on several grounds. Most importantly, the relation

between prior knowledge is presumed at best to be either indirect

(Wexler & Culicover, 1980) or partial (Pinker, in press). Indirect

or partial mappings suffice because these views postulate, in addition,

the kind of innate apparatus rich enough to operate on such inputs

to create the necessary linguistic structures. Hence, for Wexler

and Culicover, prior semantic representations generate (by an

unspecified process) deep structural representations which are then

the base with which surface strings are associated such that SS-DS

strings can be analyzed in accordance with universal grammar principles

to accomplish the construction of a particular grammar.

An alternative role for semantic information is suggested by

Pinker (in press). In his theory, semantic correlates to syntactic

constructions are necessary intitially to begin the learner's task

of fixing parameters for innate syntactic schemata. Once some

parameters are set, however, the syntactic system can bootstrap

itself, with syntactic information even fed back into the further develop-

ment of the semantic system. The relationship of semantics to surface

syntax may be more direct in Pinker's theory than in Wexler and

Culicover's, yet Pinker's approach differs from the anti-nativist

views discussed above in that, like Wexler and Culicover, he maintains

that syntactic entities are givens to be interpreted in light of,

rather than derived from, prior information. Hence, both Pinker's

and Wexler and Culicover's positions are to be distinguished from the

first view on two grounds: They grant the child more innate linguistic

apparatus, and whatever link there is to social interaction is main-

tained via semantic representations.[1]

To the extent that these nativist views assume an understanding

of what is said solely on the basis of contextual information, they

are subject to some of the same criticisms as the anti-nativist view;

namely, that there is little evidence the child has much understanding

on nonlinguistic grounds alone. The more these views reduce dependence

on prior knowledge, the more they avoid this objection. Unfortunately,

neither view is sufficiently well specified on these grounds for one

to be able to evaluate them much further. Wexler and Culicover do

not address the question of the origins of the semantic representa-

tions, nor do they consider the extent to which semantic representations

must be present before syntactic analysis proceeds. It is unclear

what the implications would be for their model if semantic readings

for only some subset of input sentences were available to the child,
thus limiting the set of sentences on which syntactic analysis could
initially be done. As noted above, such a limitation seems compatible
with Pinker's approach, although the details remain to be worked out.
Indeed, depending on the nature of bootstrapping and feedback opera-
tions, it is possible that the learning of language could itself
facilitate an understanding of the social system in which linguistic
experience itself is embedded. In other words, such a system would
be bidirectionally facilitative.[2]

One virtue of these more recent nativist approaches is that
they avoid a criticism of the earlier nativist view; namely, that
it ignored the socio-cognitive context of acquisition. In so much
as these approaches take that context into account while at the same
time arguing against an isomorphism between prior forms of knowledge
and syntactic knowledge, they seem more reasonable in general than
either earlier nativist or current anti-nativist accounts. However,
evaluating particular proposals for the relation between innate
capacities and mechanisms for utilizing nonlinguistic information in
the acquisition process must await better specification of these
aspects of the theories.

The Process Approach: The Allocation of Resources

The two previous views assume that facilitation of syntax
acquisition is accomplished via some structural analogues between a

system of antecedents and the system to be learned. They differ in
the degree of relation between the two systems and the extent to
which one derives from or is subsequent to the other. A third
alternative is one that focuses less on structural relationships and
more on how, despite the lack of clear structural mappings between
the two systems being learned, progress in one might facilitate progress
in the other. This alternative takes as a given that in any conversa-
tional situation young children have essentially two tasks, one to
create a productive grammar on the basis of the language to which
they are exposed, and the other to function as active participants
in their social worlds. To the extent that the interactive task can
be accomplished with relative ease, more resources can be allocated
to the analytic task. Thus, the crucial difference between this
view and the previous ones is that facilitation occurs via the easy
resolution of one of two tasks rather than via structural analogies.

There are two ways in which solutions to interactive tasks can
be found easily. One is actually to have the social knowledge on
which to base interactive responses. Yet, as we have seen,
attributing much social knowledge to such young children is trouble-
some. A second possibility is that children develop primitive
heuristics for staying in interactions. That is, they have inter-
active strategies which result in relatively acceptable behavior
before they fully understand what is being said to them or what is

expected of them. The proposal of heuristics has the advantage of
avoiding the troublesome attribution of social knowledge to the child
while still providing a means of making the interactional task "easy"
from the perspective of the expenditure of resources. Thus, the
process approach maintains the possibility of facilitation while
depending neither on structural relationships nor on a high level
of prior social knowledge.

Two kinds of facilitation are possible in this view. The most
obvious sort is rather general. Just about any strategic behavior
which fulfills the requirement that a response occur without much
analysis of the conversational demands should result in resources
remaining for other tasks. It is, of course, possible that some
strategies are more efficient than others; that is, they use
demonstrably fewer resources in their execution than others and
hence are even more facilitative. Even so, they should simply result
in more general facilitation on the rate of, as opposed to changes
in, the mode of acquisition.

The second sort of facilitation is more direct and specific.
While it is clear that children progress through the acquisition
process at different rates, it is as yet unclear whether modes of
acquisition differ in interesting ways among children or whether such
differences are at all related to interactional behavior. One can

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speculate, however, on how diverse interactional strategies might have

more specific effects on syntax acquisition. First, it is possible

that a given interactional strategy focuses attention on particular

aspects of the speech stream, making it more available to analysis.

For example, some children apparently imitate the most recent words

they hear as a way of producing a response in an interaction. It may

be that one consequence of the attention focused on the ends of

utterances is that they gain preferred status for early syntactic

analysis as well. Secondly, since strategic behavior is embedded in

an interactive situation, one consequence of it is that it has a

role in eliciting further input to the acquisition system. Insofar

as different interactive strategies result in different subsequent

turns by the conversational partner, then the child may be exposed

to different but especially salient information, depending on his

particular behavior. For example, consider the child discussed earlier

who had learned to respond to his mother with "hmmm." Such responses

on his part were often followed by his mother reformulating her question

to him or asking a second question. Contrast that sort of input

with the behavior of a mother whose child often responded "that"

to just about any sort of question she asked. Her response to those

often inappropriate responses was to name an object she thought

might be the referent for the child's utterance. Hence, these two

children were getting differential amounts of different inputs as a

consequence of their response strategies. If the mechanisms of syntactic analysis are at all sensitive to frequencies of different types of input, then these sorts of differences could have an effect on the acquisition process.

The process approach has several advantages over the anti-nativist position in that it avoids two major difficulties of the latter view. One is the postulation of direct structural relationships between the social sphere and the syntactic one; the other is its dependence on external factors as the major determinant of the rate and course of acquisition. The process position avoids these problems first by taking no stand on the issue of structural relationships; they are not crucial to the proposed facilitation mechanism. On the other hand, insofar as some structural relations, either partial or indirect, may be necessary for syntactic analysis to proceed, the view is not incompatible with the nativist positions discussed earlier. Secondly, the mechanism of resource allocation maintains a role for the environment but gives the child a larger role in the determination of rate and order of acquisition. To the extent that resource allocations are functions of strategic behaviors developed in and having consequences for interactions, the determinants can be said to be truly interactive, rather than wholly external or internal to the child. Thus, this position avoids the criticism that can be made of the anti-nativist view that the environment has to operate in a manner finely

tuned to the child's capacities without a clear exposition of the means

for achieving that tuning or empirical evidence for it (see Shatz, in

press). Still another advantage to the process approach is that it

allows for bidirectional facilitation. Presumably, syntactic an ysis

would result in a greater degree of linguistic performance in inter-

active situations, possibly fostering the engagement of the child in

more sophisticated social interactions, with increased opportunities

for social learning.

With regard to evidence for the process approach, much of it is

on the level of feasibility arguments rather than actual demonstrations

of facilitation. For example, the notion of limited resources has

a reasonably long and respectable history in cognitive psychology.

Moreover, it has on several occasions been recruited to explain

children's linguistic and communicative behavior (Bloom, Rocissano,

& Hood, 1976; Knapp, 1979; Shatz, 1978d). One possible difference

between these previous uses of the notion and the one used here is that

in the previous cases, while researchers argued that the performance

of one task could interfere with the performance of another task,

the two tasks drawing on the same pool of resources seemed alike in

that they both involved the execution of cognitive processes, for

example, understanding utterances, producing syntactically complete

strings, and so on. In the present case, one could argue, the claim

is somewhat different; namely, that it is a performance task and a

learning task which are hypothesized to share the same resource pool.
Furthermore, it could be argued that there is less evidence in the
cognitive literature for these sorts of tasks sharing limited resources
than for ones in like domains doing so. The counter to this argument
is that in the absence of full understandings of learning and cognitive
processes, it is unclear how different or separate the two sorts of
tasks are. At least at present, there seem to be neither theoretical
nor empirical reasons to reject the proposed extension of the limited
resources argument out of hand.

As for the existence of conversational strategies, the evidence
in favor of them seems reasonably solid. Not only are there many
anecdotal reports of the sort quoted in our examples above, but more
systematic work has also confirmed the existence of various sorts of
response heuristics in young children. Shatz (1978a; 1978c; Shatz,
Bernstein, & Shulman, 1980) found that children had a tendency to
produce action in response to ambiguous utterances. Allen and Shatz
(Note 4) described children who took any sort of what-question as an
opportunity to make responses based on their experience with their
own mother's question routines, and imitation as a conversational
response strategy has been suggested by Rees (1975) and reported by
Boskey and Nelson (Note 5). Such research suggests that children
develop consistent ways of responding to conversational demands on
the basis of only partially understood or analyzed information about

either the linguistic or communicative constraints on the messages
addressed to them.

To my knowledge, there have been no direct tests of a process
facilitation model. However, a bit of suggestive data is available
from a study done on the relationship of children's behavior in res-
ponse to language under different conditions of contextual support
(Shatz, Allen, & Raizman, Note 6). In this study children aged 18 to
26 months were asked a variety of questions like "What says woof-woof?"
and "What does a dog say?" The same questions were asked three times,
once with a gesture at a relevant object (in this case, a toy dog),
once with a gesture at an irrelevant object, and once with no gesture
at all. We found that the 14 subjects could be divided into three
groups: five who had more tendency to produce verbal imitations as
responses, five who had virtually no tendency to do so, and four
who occasionally imitated. In other words, we seemed to have
children with different sets of strategies for operating in unfamiliar
conversational settings. The question of relevance here is whether
these children differed in their linguistic knowledge in ways that
suggested their different strategies of interaction might have led
them down divergent paths of linguistic development.

Before proceeding, it is important to point out that the groups
were unequal in that by and large the imitators tended to be found
among the younger children. Hence, overall differences in general

measures of language development such as mean length of utterance (MLU) were expected, although the correlation between MLU and frequency of imitation was low once age was partialled out (r = -.19). Of more interest is the possibility that the less generally advanced group had some knowledge not possessed by the more advanced group. In particular, imitators may have been more sensitive to words likely to appear at the ends of utterances and therefore might have learned more about constructions appearing in last position than would non-imitators. One of our question types was the sort of construction requiring a progressive verb, e.g., "jumping," in response to questions like "What is the girl doing?" Thus, we could examine whether imitators were better at this sort of response form than nonimitators. In fact, only one imitator produced any syntactically canonical responses to such utterances, as did one nonimitator. Nor was imitators' performance on this utterance type any better than on the other sorts of utterances where facilitation via an imitation strategy might not have been expected.

Given the age differences in the subject groups one might argue that imitation is a characteristic strategy of an early stage through which our nonimitators had already progressed. If so, they would have already achieved benefits from it and could not be expected to look worse on this measure than children still in that stage and in the process of acquiring those benefits. There are two reasons

to discount this argument. First, there is little reason to believe
that all or even most children go through a stage of imitation (Bloom,
Hood, & Lightbown, 1974). Second, most of the nonimitators failed
to produce canonical responses; hence, if they did pass through a
stage of imitation, they apparently learned little about progressive
verbs while in it. In sum, neither nonimitators nor imitators do
well on a construction that might reasonably be expected to be facili-
tated by an imitation strategy.

Obviously, the data presented above are only suggestive. They
neither address the issue of general facilitation nor do they un-
equivocally disconfirm the possibility of specific influence. They
do suggest, however, that conversational strategies may have little
effect on the progress of syntax acquisition, and that the two tasks
being accomplished by the child may go on relatively independently
of one another.

It is important to point out that even if specific process facili-
tation was proved, it would have few implications for the etiology of
linguistic structures. Because no assumptions of structural analogies
are made in the process approach, the architecture of the syntactic
system is assumed to be derived from other sources, either innately
linguistic or possibly cognitive in nature. Facilitation, should it
occur, is primarily of rate, and of order for those places in the

system where the order in which parameters are set has no consequences

for the structure of the system. Thus, the process facilitation view

does little in and of itself to assuage anti-nativist qualms concerning

innate constraints on linguistic structure. As already noted the

process view is compatible with nativist proposals. It is also

compatible with the final view to be presented, one in which the

possibility of structural relationships exists, not because of one

system depending on or deriving from the other, but because the

acquisition of the complex systems of both social and syntactic knowl-

edge are subject to the same constraints inherent in the learning

device.

A Relationship without Facilitation: Commonality of Learning Principles

The previous views have all in one way or another assumed some

sort of facilitation, either unidirectional or bidirectional, as a

function of the relationship between social and syntactic systems.

Yet, the possibility of a relationship between the two systems does

not depend on the occurrence of facilitation. It may be that the

systems share properties in common such that the investigation of one

can lead to insights into the acquisition of the other without the

actual acquisition of one leading to facilitation of acquisition of

the other. In other words, the analogy between the systems may be

more appropriately applied at the level of the researcher's analysis

than at the level of the child's. The proposal to be considered here is that the shared properties have to do with the common principles operating in the acquisition of complex knowledge systems.

There are several reasons for suggesting that there may be common properties to the acquisition of both social and syntactic knowledge. First, while structural relations between the systems have been difficult to confirm, there is little doubt that both are complex, rule-governed systems. Both, for example, are characterized by multiple form-function mappings. In language, one syntactic structure can serve more than one function, and multiple forms can express a single function. Similarly, a sequence of interactive behavior can serve multiple social purposes, and particular purposes can be expressed in multiple ways. Secondly, both systems seem to have some universal properties as well as others that are culture or language specific.

As for developmental considerations, rapid progress on both tasks is made early in life, when general cognitive limitations of the child are presumably at their greatest. Finally, in both the social and the linguistic spheres, it appears that the systems to which children are exposed are somewhat modified and adjusted to the child's capacities (Ratner & Bruner, 1978; Snow, 1977; Snow, Dubber, & deBlauw, Note 7). In the case of syntax, the modifications do not appear to solve all the problems of acquisition (Newport, 1976; Shatz, 1979). While it is less clear to what extent the early interactions in which parents engage their children ease the problem of

learning the social rules of the culture, our "hmm" example at least
suggests that early interactions are not always transparent. Further-
more, the large within-culture and cross-cultural variations in the
degree to which parents provide direct tuition in social behavior
also suggest that the acquisition of social knowledge is not fully
under environmental control.[3] In sum, to the extent that children
are confronted at the same point in time in their general development
with sets of complex data that are nonobvious with regard to the
organization of the systems, then one might expect that children
bring to the acquisition of such systems a common set of devices
for dealing with the input data. While the discovery of such common
acquisition principles, if they exist, is sure to be an arduous
task, I suggest below a few examples of the kinds of commonalities
I am proposing.

At a fairly elementary level, one can draw parallels between
the acquisition stages of the two systems with regard to the occurrence
and role of rote learning. In both the social and linguistic domains,
children are engaged early on in rather rigid sequences of routinized
behavior. There are several reasons why routines might be crucial
to the acquisition of complex systems composed of multiconstituent
sequential behavior. For one, the routines may have consequences
for the ease of processing in that their practice may enhance the
accessibility of responses in sequence. Moreover, without requiring

much creativity or knowledge on the part of the child, they foster

participation in extended patterned sequences, providing information

on the pacing and time parameters for standard sequences.

It has been argued that even some of the structural aspects of

the systems to be learned can be demonstrated in a series of routine

sequences by varying the units which share privileges of occurrence

within sequences, by transforming elements systematically, or by

varying the occurrence of optional elements (Bruner & Sherwood,

1976; Ratner & Bruner, 1978). However, the learner must be able to

take advantage of such information displays. Insofar as any learning

in either the social or the syntactic spheres takes place on the

basis of such demonstrations, it is likely that both systems recruit

common cognitive procedures for characterizing the displayed informa-

tion on the basis of optionality, privileges of occurrence, permissible

transformations, and so on. Moreover, it seems reasonable that

the necessary cross-sequence comparisons in both systems would be

subject to the same memory limitations.

It is important to note that this view differs from the anti-

nativist one in that no direct structural analogies between the two

systems are being suggested. Rather, the two systems are both

constrained by their dependence on a set of common cognitive procedures.

There is no stipulation that all available procedures be utilized

for the acquisition of every complex system, nor is it necessary

that there be a unique procedure for any analysis that must be done.

Therefore, a partially unique solution to its overall acquisition prob-

lem may be achieved within each knowledge domain. One would not

predict isomorphic relations between any two complex systems any

more than one would expect isomorphic specific grammars in two

languages commonly constrained by principles of universal grammar.

As in languages, the only place where isomorphic properties would be

expected is where there would be a unique solution to a commonly

required analysis. It would be foolh·rdy to speculate at this

time on the location of such intersections of the two complex

systems being considered here.

Moreover, it is reasonable to suggest there may be uniquely

linguistic procedures among the set of procedures, if all that is

meant by the suggestion is that there exists at least one procedure

which applies only to linguistic data. Such procedures may exist

either because humans do not fully utilize their capacities to create,

a complete range of possible complex systems or because those pro-

cedures are appropriate only to structures functioning within one

particular system and no other. This latter possibility is at the

heart of traditional nativist claims, but the question of which pro-

cedures are shared by systems should be as interesting as whether

there are ones unique to language. It is the investigation of the

former question that might facilitate the understanding of the

acquisition of complex systems generally.

The argument that children have proced res for analyzing complex
data in order to construct a solution for an internal problem space
has been elegantly presented for the language domain by Karmiloff-
Smith (in press). She suggests that much of what passes as error
in children's speech can be understood as indications of the internal
analyses children perform. She takes as evidence for her position
several cases in which children move from producing forms correct
by adult standards to some consistent alterations of these forms and
then back to more standard ones. A related example of analytic
behavior is reported by Newport (1981). She notes that deaf children
learning to sign go through stages of marking the decomposition of
signs into their morphemic elements. Thus, instead of producing
the sign for "cut with a scissors," which is made by projecting the
hand through space while simultaneously moving the index and middle
fingers in a scissoring motion, the children first make the
scissoring motion and then move the hand through space. My sug-
gestion here is that any complex rule-governed system will require
an internal problem space for the accomplishment of acquisition,
and that certain stages in the development of complex systems will
resemble each other insofar as the analytic procedures utilized in
those problem spaces are common ones. Thus, it would not be
surprising to find evidence in the development of children's social
knowledge of a stage at which they do the equivalent of morphemic

analysis. Indeed, the anecdotal reports of reduplicative phrases like "boy brother" or "mommy lady" may be attempts to mark separately each of the relevant dimensions along which distinctions in the child's social world are drawn.

In summary, then, the commonality-of-learning-principles view provides the following answers to the questions posed above. The tasks of acquiring social and syntactic knowledge are seen as being mainly simultaneous, primarily because the facts suggest that much of both are learned over the same time period in development. There is no necessary temporal relationship between them. Nor is there reason to suppose that the acquisition of one facilitates the acquisition of the other. Obviously, learning how to use one's language appropriately in social situations may be closely tied to social knowledge, but it is the acquisition of syntax in particular that is our concern here, and not pragmatic development. Third, the basic proposals of this position grant the child procedures for analyzing data in internal problem spaces. Hence, the role of the child as a mediator between the environment and the knowledge system is an important one. Finally, the existence of direct structural commonalities are compatible with but not necessary to the view. While the rules of the games may be different, the rules for learning the rules may not be.

Summary

Table 1 presents a synopsis of the kinds of answers the four
positions described above give to the questions posed earlier. I
have argued that the weight of the evidence is against an anti-
nativist position, which depends on direct structural commonalities
and prior social sophistication to support its claim that the child's
contribution is low. By acknowledging a larger contribution from the
child, the other views are more compatible with the current evidence
on these issues. However, the views differ as to the specific
nature of the child's contribution. The neo-nativist position argues
for uniquely linguistic mechanisms to account for syntax acquisition.
The learning principles view leaves open the question of how many
procedures involved in syntax acquisition are uniquely linguistic,
while the process view is compatible with both the neo-nativist and
learning principles positions. In the absence of better-specified
positions and with little relevant data, it is inappropriate to
speculate on the relative worth of the neo-nativist and learning
principles views. Indeed, it is possible that they may turn out to
be closer to one another in their more elaborated versions.

It is perhaps reasonable to defend the exposition of these
various positions despite their deficiencies in specificity and,
undoubtedly, veridicality. The fact that interaction as a level of
analysis is gaining equal status with the sentence and the word

Table 1

Four Views of the Relation Between Social Interaction and Syntax Acquisition

Characteristics	Positions			
	Anti-nativist	Neo-nativist	Process Facilitation	Learning Principles
Concurrent tasks?	No	No	Yes	*
Facilitation?	Yes, Unidirectional	Yes, Bidirectional	Yes, Bidirectional	*
Child's Contribution?	Low	High	High	High
Structural Commonalities?	Yes, Direct	Yes, Partial or indirect	*	Only if based on learning principles

*For these questions, no one answer is central to the position. For example, structural commonalities are compatible with but not necessary to the process facilitation approach.

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is indicative of the time and effort being expended on research on inter-

action and language. Some of that work is motivated by other interests

than a desire to explain the acquisition of syntax. But often moti-

vations are so unclear or the relation of such work to syntax

acquisition is left so amorphous that erroneous conclusions are easily

drawn. I have argued that "if the field of language acquisition is

to go beyond the level of phenomenal description of behavior, the

theoretical question of relations among kinds of knowledge must be

addressed more explicitly" (Shatz, 1978b). The above is an attempt

to provide a framework in which such a discussion can proceed.

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Footnotes

[1]Pinker's and Wexler and Culicover's views are distinct from those
(e.g., Schlesinger, 1971) that suggest syntactic structures evolve
from semantic structures without benefit of further innate constraints.
Since, for these latter views, too, semantic representations may depend
to some extent on interactional experience, they appear to be related
but non-nativist characterizations of a social interaction-syntax
relation. However, such views are not presented here because they
suffer other difficulties as viable theories of acquisition (see
Marantz, Note 2, for a review).

[2]The position that language is a vehicle for providing the child
with a social world view is a popular one in anthropological circles
(cf. Schieffelin, 1979; Harré. Note 3). Such a position helps remind
us that it was possibly the enticingly controversial nature of
nativist claims, as well as a kind of ethnocentricity, which led
developmental psycholinguists to consider social knowledge the
antecedent and language acquisition the mystery to be explained in
terms of it, rather than the other way around.

[3]See Schieffelin (1979) and Joslin (1958) for examples of direct
tuition in different cultures.

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